

# PATENT ABSTRACTS OF JAPAN

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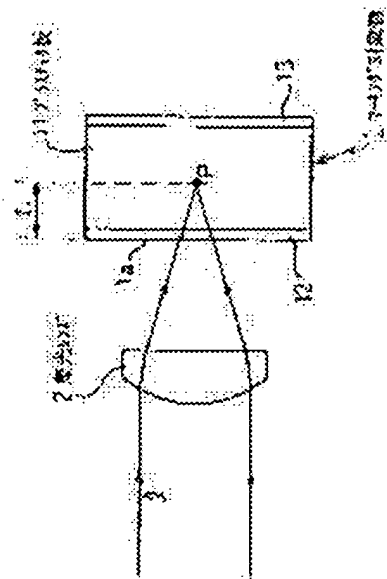
## (54) LASER MARKING

### (57)Abstract:

PURPOSE: To prevent the lowering of the strength of an object, the deterioration of the discriminating properties of a mark or the damage of a surface by converging a laser beam inside the marking object and putting the mark inside the object.

CONSTITUTION: A laser beam  $L$  is converged on a point  $P$  separated only by a distance of  $Z1$  to the inside from one surface  $1a$  of a marking object  $1$ . The laser beam having energy of one shot and approximately 0.12mJ is oscillated, and the distance  $Z1$  is brought to 1.8mm.

Accordingly, since the value of energy density on the surface  $1a$  of laser beam is far smaller than the breakdown threshold of the surface, the surface  $1a$  being not damaged, the melting, change of properties, etc., are generated near the point  $P$ , and the refractive index, transmittance, etc., of the property-changed section differ from other sections, and the section can be discriminated from the outside and function as a mark.



## LEGAL STATUS

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